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Magnetic Resonance Investigations of h-YbMnO3

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Abstract

© 2016, Springer-Verlag Wien.Polycrystalline samples of ytterbium manganites have been synthesized with deficiency of Yb3+ ions. The X-ray analysis showed that the structure of the sample is hexagonal (h-YbMnO3) with the space group P63cm. The analysis of the X-ray diffraction peak intensities allowed to find the occupancy of Yb3+ and Mn3+ positions which are about 89 and 100 %, respectively. The electron spin resonance (ESR) measurements were performed using X (9.4 GHz), Q (34.2 GHz) and W (94.1 GHz) bands. The ESR spectrum displays the broad exchange-narrowed Mn3+ resonance line and an additional signal, which is attributed to the ferromagnetically correlated clusters, formed by mixed-valence manganese ions near vacant Yb3+ positions, confirmed by the observation of the hysteresis loop in the magnetization of h-YbMnO3.

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